Electron irradiation response on Ge and Al-doped SiO(2) optical fibres

Abstract:

This paper describes the thermoluminescence response, sensitivity, stability and reproducibility of SiO2 optical fibres with various electron energies and doses. The TL materials that comprise Al- and Ge-doped silica fibres were used in this experiment. The TL results are compared with those of the commercially available TLD-100. The doped SiO2 optical fibres and TLD-100 are placed in a solid phantom and irradiated with 6,9 and 12 MeV electron beams at doses ranging from 0.2 to 4.0 Gy using the LINAC at Hospital Sultan Ismail, Johor Bahru, Malaysia. It was found that the commercially available Al- and Ge-doped optical fibres have a linear dose-TL signal relationship. The intensity of TL response of Ge-doped fibre is markedly greater than that of the Al-doped fibre.